DOCUMENT RESUME

ED 460 527 EC 306 903

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TITLE The Continuum of Care Study: An Assessment of Child/Adolescent Service Needs within the Public Mental Health System.

PUB DATE 1996-02-00

NOTE 8p.; In: A System of Care for Children's Mental Health: Expanding the Research Base. Proceedings of the Annual Research Conference (9th, Tampa, FL, February 26-28, 1996); see EC 306 844. Tables are not available from ERIC.

AVAILABLE FROM For full text: http://rtckids.fmhi.usf.edu/Proceed9th/9thprocindex.htm.

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Adolescents; Children; Clinical Diagnosis; *Emotional Disturbances; Integrated Services; *Mental Health Programs; *Participant Characteristics; *Predictor Variables; Program Effectiveness; Program Evaluation; *Student Needs; Surveys

IDENTIFIERS *Virginia

ABSTRACT

This paper discusses the results of a study that investigated the need for services across the continuum of child/adolescent mental health services in Virginia. Specific objectives of the study were to: (1) describe the youth receiving services; (2) determine where and to what extent gaps in services exist; (3) determine the reasons why youth do not receive services; (4) empirically classify youth on the basis of service packages received; and (5) identify those socio-demographic, clinical, and treatment history variables that best predict the service packages needed. Data were gathered through a survey of community-based case managers on a stratified random sample of youth who were receiving public mental health services (n=2,059). Results indicated the largest service gaps for youth with serious emotional disturbances (SED) were found for in-home supported living, day treatment, and residential support where less than 50 percent of recommended services were received. Several demographic and mental health variables can be used to predict which youth will be more likely to use a particular service package, including functioning level, history of mental health hospitalization, diagnosis, special education status, legal status, and residence. (CR)

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The 9th Annual Research Conference Proceedings, A System of Care for Children's Mental Health: Expanding the Research Base (February 26 - 28, 1996).

ED 460 527

The Continuum of Care Study: An Assessment of Child/Adolescent Service Needs Within the Public Mental Health System

Introduction

Given the current fiscal environments in which State Mental Health Administrations are operating, there is increasing pressure to develop empirical methods of assessing need and allocating resources. In 1995, the Virginia Department of Mental Health, Mental Retardation, and Substance Abuse Services (DMHMRSAS) conducted a study to evaluate the need for services across the continuum of child/adolescent mental health services. The specific objectives of this study were to: (a) describe the youth receiving services, (b) determine where and to what extent gaps in services exist, (c) determine the reasons why youth do not receive services, (d) empirically classify youth on the basis of "service packages" received (or identified as needed), and (e) identify those sociodemographic, clinical, and treatment history variables that best predict the service packages identified as needed.

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Method

Data were gathered through a survey of community-based case managers (or primary clinicians) on a stratified random sample of youth who were receiving public mental health services on December 31, 1994 (N = 2,059). This population was divided into two distinct sub-populations, youth with serious emotional disturbance (SED; N = 1,100) and non-SED (N = 959) to determine whether their service needs differed.

Respondents to the survey provided (a) descriptive data about the youth, (b) the types and amounts of services received during the last quarter of 1994, (c) the types and amounts of services that would have been needed to most appropriately and effectively serve the youth during the quarter as estimated by the youth's case manager or clinician, and (d) reasons for differences between services received and needed (e.g., service not available, insufficient service capacity, etc.). Gaps in services were determined by calculating the difference between the types and amounts of services provided and the types and amounts of services needed.

Using cluster analysis, "typical" service packages were identified, based on services recommended as needed by the case managers/clinicians. The youth were then classified according to cluster membership and a discriminant function analysis was conducted using sociodemographic, clinical, and treatment history variables to determine which variables best predicted recommended service packages.

Demographic variables that were included in the discriminant function analysis included age, race, gender, educational level, special education enrollment, residence in private household, legal status (voluntary vs. involuntary), annual income, SSDI eligibility, SSI eligibility, and payment source. Clinical variables used in the analysis included number of prior episodes, history of previous psychiatric hospital admissions, SED status, and score on the Global Assessment of Functioning (GAF). Due to the low frequency of some of the diagnostic categories used in the survey, primary and secondary diagnoses were grouped into the following categories: (a) schizophrenia and other psychoses, (b) adjustment disorders, (c) mental retardation or pervasive developmental disorder, (d) attention-deficit or disruptive behavior disorders, (e) anxiety or mood disorder, (f) substance dependence or abuse, and (g) other.

Results

Consumer Profile

The typical youth enrolled for services at a Community Mental Health Center (CMHC) in Virginia was a male (60%), 13 to 17 years of age (50%). African-American youth were over-represented relative to their percentage in

youth were over-represented relative to their percentage in the general population (29%). Half of the youth with SED were enrolled in special education. The majority of these youth (83%) came from families with total annual incomes of less than $20,000. Medicaid was the most common source of payment for CMHC services, although the consumer's family was the direct source of payment for a large percentage (29%) of youth without SED.

Among youth with SED, primary diagnoses of disruptive behavior, attention deficit, anxiety, and mood disorders were most common, accounting for 83% of the youth. By contrast, among consumers without SED, the most common primary diagnosis was adjustment disorder (27%). Disruptive behavior, attention deficit, and mood disorders were also very common, accounting for an additional 44% of youth without SED.

Service Needs

In order to identify gaps in service capacity, the total amount of individual services recommended was compared to the total amount received. The CMHCs were able to meet a substantial amount of estimated need for inpatient and medication management for consumers with SED (greater than 90% and 80%, respectively). For consumers without SED, estimated need for inpatient and highly intensive residential services was most frequently met (greater than 70%). With respect to gaps, the largest gaps for youth with SED were found for in-home supported living, day treatment, and residential support where less than 50% of recommended services were received. For youth without SED, the largest gaps were found for residential support, in-home/supported living, rehabilitation, day treatment, and early intervention; less than 30% of the total estimated services needed were provided.

Reasons for Gaps

The reasons for insufficient amounts of services being provided were consistent regardless of SED status. "Lack of capacity" was the reason reported for the greatest percentage of youth not receiving needed services. "Missed/no show" and "consumer/family decision" were also significant factors, particularly for outpatient and medication management services. For this latter service category, "consumer/family decision" was the most frequently occurring reason. Other reasons, cited only rarely, were "consumer behavioral problems," "insufficient consumer resources," and "inaccessibility."

Cluster Analysis

The cluster analysis was limited to consumers who responded to the Virginia Service Assessment Questionnaire and Continuum of Care Consumer Profile. The final data set included 1097 youth with SED and 799 non-SED youth. Because the number of youth with SED were not in proportion to the number of non-SED youth, the non-SED

proportion to the number of non-SED youth, the non-SED sample was weighted by 1.67. This weight was derived from the percentage of SED cases in the sample weighted by geographic location. This resulted in a total sample for the cluster analysis of 2428 youth.

In order to classify consumers according to the service packages recommended by case managers, a cluster analysis using the K-means procedure of the Statistical Package for Social Sciences (SPSS) was conducted. Cluster solutions using 3, 4, and 5 clusters were computed in an effort to identify the solution which created clusters with sufficient sample sizes ($N > 30$) to allow for further data analysis and ease in interpretation. Using this criterion, the four cluster solution was chosen as the preferred solution for services recommended.

Using cluster membership as the independent variable and number of service hours per service type as the dependent variable, a one-way analysis of variance (ANOVA) was used to identify those service types that distinguished among the clusters. When the F-score for a given service type was found to be statistically significant, the Student-Newman-Keuls procedure was used to differentiate among clusters on that service (see Table 1).

To interpret the clusters, attention was given to those services shown by the post-hoc analysis to most clearly distinguish each cluster from the other clusters. Individuals in Cluster 1, labeled Residential Services, needed the most units of intensive residential services and outpatient services. The most characteristic feature of Cluster 2, which described over 90% of the sample, was the low rate of all services recommended. Therefore, this group was labeled Minimal Services. Individuals in Cluster 3, labeled Inpatient Services, were described as needing the highest rates of inpatient, residential, and case management services. Individuals in Cluster 4 were recommended for the widest variety of services with need for residential support, day treatment, and vocational services exceeding that of the other groups. These services are primarily community based and of moderate intensity, and therefore, this cluster was labeled Wraparound Services. The stability of the cluster solution was confirmed by selecting random subsamples and repeating the cluster procedure on the subsamples to test for consistency of the cluster memberships between the full sample and subsamples using the Kappa statistic.

Discriminant Function Analysis

To determine which demographic variables could predict cluster membership, a discriminant function analysis was conducted using the Wilk's lambda method to test for the discriminating power of the variables in the function. Given the absence of a priori knowledge about the distribution of group membership, the equal prior probabilities method was used. The variables that predicted cluster group membership

based on services needed are presented in Table 2. Classification of cases to clusters based on these variables made 61% fewer errors than would be expected by chance. In order to determine the relationship of these variables with cluster membership, a one-way analysis of variance was conducted using cluster membership as the independent variable and the predictor variables as the dependent variables. All of the predictor variables were significant ($p < .01$). Finally, the Student-Newman-Keuls test ($p < .05$) was used to determine the significance of differences between the group means.

These findings indicate that children perceived as needing Inpatient Services (Cluster 3) are more likely to be in special education, have a thought disorder diagnosis, have a history of previous mental health hospitalization, and have a low GAF score, indicating high impairment. Youth needing Residential Services (Cluster 1) were more likely to have an involuntary referral from the criminal justice system, a diagnosis of substance abuse, and a relatively high GAF score, indicating low impairment. Non-SED children living in a private home were most likely to be perceived as needing Minimal Services (Cluster 2). There were no clear predictors of membership in Cluster 4, Wraparound Services.

Discussion

Overall, the results of this study indicate that in Virginia's public mental health system:

- The greatest needs are for increased service capacity for residential and day support services.
- In the opinion of direct service staff, lack of service capacity is the major reason why consumers do not receive the amounts of service needed.
- Youth who are recommended by clinicians/case managers to receive more intensive services fall into three groups based on typical service packages recommended (i.e., inpatient, residential, and wraparound).
- Several demographic and mental health variables can be used to predict which youth will be most likely to use a particular "service package." These variables include score on the GAF, history of mental health hospitalization, diagnosis, SED status, special education status, legal status, and residence in a private home versus other living arrangement.

The results of this study provide documentation of the greatest service needs for child/adolescent consumers of public mental health services within one state system. There appears to be a large unmet need for all types of community-based services, and a need for CMHCs to be able to offer a broader array of services than they currently offer. The results of this study are being used to support and develop a "reinvestment strategy" (i.e., moving funds from

inpatient to community-based services) as well as managed care-type initiatives.

The youth typologies and related service packages can provide a useful tool for service systems planning. Knowledge of appropriate service packages for different types of youth will allow planners to "size" the system of care based on the known characteristics of the consumer population. Since there are differences in the variables that predict service usage between youth and adults, examining these populations separately is likely to result in more accurate estimations of service utilization.

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Liberton, C., Kutash, K., & Friedman, R. M. (Eds.), (1997). The 9th Annual Research Conference

Proceedings, A System of Care for Children's Mental Health: Expanding the Research Base (February 26 - 28, 1996). Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, Research & Training Center for Children's Mental Health.